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# SOUND CHOICES FOR DEVELOPMENT

The Impact of Public Investments in Rural India and China



# LESSONS FROM RURAL INDIA AND CHINA

**R**ural poverty in India and China has declined substantially in recent decades. This welcome development has come about largely because governments in both countries have invested in agricultural research, education, infrastructure, and other areas important to the rural poor. But what kinds of investments have reduced poverty the most? A clear answer to this question can help policymakers invest limited resources in ways that most benefit the poor.

Recent studies by IFPRI® and collaborators in India and China show that different kinds of rural public investment pay a range of dividends. Developing countries can significantly reduce rural poverty, stimulate agricultural growth, and move toward food security if they recognize that public investments are indispensable tools for achieving these ends and if they make the right investments. The research also reveals, in stark contrast to conventional thinking, that investments in low-potential lands can bring equal, if not greater, returns to investments in high-potential lands.

## KEY INVESTMENTS

IFPRI and its collaborators looked at the impact of seven kinds of rural investments in India and China, ranging from poverty loans to spending on roads. Government expenditures that contributed the most to increasing agricultural productivity and lowering poverty levels were those that helped farmers grow more food, gain better access to markets, and improve literacy. The biggest payoffs for reducing rural poverty and increasing agricultural growth came specifically from investments in agricultural research and development (R&D), education, and rural infrastructure, particularly roads.

### AGRICULTURAL R&D

Government expenditure on agricultural R&D increased agricultural growth in both India and China more than any of the other investment categories analyzed (Table 1). R&D's impact was roughly two and a half times greater than that of the second most significant investment: roads in India and education in China.

But when it came to reducing poverty, agricultural R&D expenditures ranked second in both India and China (Table 2). R&D brought substantial indirect gains through greater agricultural yields, which generated higher incomes for farmers, declines in food prices for consumers, and improved wages in nonfarm activities.

### EDUCATION

In China, spending on education brought the greatest number of people out of poverty. Education developed the skills of rural residents, enabling them to earn higher wages in nonfarm

employment and to adopt new farm and nonfarm production methods and technologies. It had the second-largest effect on agricultural growth, after R&D.

In India, spending on education helped the poor, but it did not increase growth and reduce poverty as robustly as did spending on R&D and roads.

The different allocation of educational investments in India and China accounted in part for the divergence in education's ranking in the two countries. China directed educational spending at rural areas, whereas India directed these investments largely to institutions of higher learning in the cities.

### ROADS

The Indian government's expenditure on road construction contributed more to poverty reduction than did the other investments. Roads helped farmers transport their goods to markets, gave them better access to higher-wage employment opportunities in the rural nonfarm sector, and increased consumers's access to food markets. Investment in infrastructure in general (roads, electricity, and communications) also reduced poverty by enhancing agricultural productivity growth, thus increasing farm incomes and expanding the nonagricultural sector. But road networks ranked second in influence on agricultural growth.

Road construction ranked third in poverty reduction in China, closely behind R&D. Rural telecommunications also had a substantial impact on poverty. Like education, infrastructure increased growth in the nonagricultural rural sector and decreased regional inequality more than did R&D. Roads played the most significant role in the nonfarm economy's contribution to GDP growth and also generated the second largest investment return—only slightly less than R&D—for the rural economy as a whole.

**Table 1—Ranking of rural public investments that increase agricultural productivity the most, in descending order\***

INDIA	CHINA
1. Agricultural R&D	1. Agricultural R&D
2. Roads	2. Education
3. Education	3. Roads

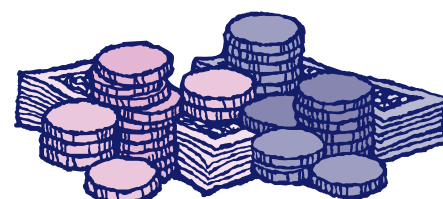


Photo credit: © World Bank/Curt Carnemark

**Table 2—Rural public investments that decrease poverty the most\***

INDIA	Number of poor lifted out of poverty per Rs 1 million (1993 prices)	CHINA	Number of poor lifted out of poverty per 10,000 yuan (1997 prices)
<b>Roads</b>	<b>124</b>	<b>Education</b>	<b>9</b>
<b>Agricultural R&amp;D</b>	<b>85</b>	<b>Agricultural R&amp;D</b>	<b>7</b>
<b>Education</b>	<b>41</b>	<b>Roads</b>	<b>3</b>
Rural development	26	Electricity	2
Soil and water conservation	23	Telephone	2
Health	18	Irrigation I	1
Irrigation	10	Poverty loan	1

NOTE: Figures are rounded to whole numbers.



## IMPACT OF OTHER INVESTMENTS

Investments in poverty alleviation schemes, health programs, and irrigation are important for improving the lives of the poor and boosting agricultural production. But research has found that these are not the best routes for achieving poverty and food security goals in the long run.

Investments in programs designed specifically to assist the poor generated either the smallest gain or a relatively low gain in poverty reduction. In China, loan programs intended to improve the conditions of the poor actually had the least impact on poverty. The results for India were similar. Rural development and soil and water conservation schemes, created for the purpose of providing nonagricultural wage employment for rural laborers, brought only minor reductions in the number of poor. Research confirms that promoting the income-generating capacities of the poor reduces poverty more effectively than direct income transfers. Although programs directed specifically at the poor do not constitute a long-term strategy for reducing poverty, they are an effective way to alleviate poverty in the short term, especially during droughts and recessions.

Public spending on health contributed little to the lessening of poverty and had no positive effect on productivity growth. One would expect improved health status to alleviate poverty by increasing the productivity of the poor, thus bringing wage increases and greater nonfarm employment opportunities. However, health ranked sixth among the types of investments analyzed. Moreover, health spending did not affect agricultural growth at all, despite the assumption that it would increase labor productivity.

Investments in irrigation had only a modest impact on agricultural productivity growth and even less influence on poverty reduction. In both countries, much of the agricultural land was already well irrigated by the early part of the period under study. Additional investments in this sector generated only low productivity returns overall, but the returns for mid-potential lands were greater than for high-potential ones.

\* SOURCE: Shenggen Fan, Peter Hazell, and Sukhadeo Thorat, "Government Spending, Growth and Poverty in Rural India," *American Journal of Agricultural Economics* 82 (No. 4, 2000): 1038-1051; Shenggen Fan, Linxiu Zhang, and Xiaobo Zhang, "Growth, Inequality, and Poverty in Rural China: The Role of Public Investments," IFPRI Research Report 125 (Washington, D.C., forthcoming).

# WINNING WITH LESS-FAVORED AREAS

According to conventional wisdom, investments should be directed to areas with the highest agricultural productivity returns, to those most agriculturally developed, or to those with the best agro-ecological conditions. This strategy, it is argued, would reduce poverty at the national level as well. Food prices would decrease and employment opportunities rise, while the poor in low-potential areas would migrate to high-potential lands. However, the rationale for neglecting less-favored lands is being increasingly challenged by various findings, three in particular: (1) past patterns of agricultural growth in high-potential lands have failed to address effectively the problem of poverty and food insecurity in many less-favored areas; (2) evidence increasingly points to stagnating levels of productivity growth in many high-potential lands; and (3) evidence is emerging that the right kinds of investments in many less-favored areas can produce high returns in agricultural productivity.

Investments in less-favored lands in India and China made a stronger contribution to reducing poverty than spending in developed areas. In both countries, for every investment type, the poverty reduction effects were greater in low- and mid-potential areas than in high-potential lands. In China's low-

potential western region, where the poor are concentrated, investments in R&D, infrastructure, and education had especially notable impacts.

Contrary to conventional wisdom, investments in low-potential lands generally produced higher returns for agricultural productivity growth than those in high-potential lands. In India, for every investment sector, the returns from non-irrigated rainfed lands were higher than those from irrigated ones. In the case of China, mid-potential areas experienced the greatest productivity growth as a result of investments. Hence, a trade-off may exist in China between poverty reduction and productivity growth, depending on the land area (low- or mid-potential) to which investments are directed.

Investments in less-favored areas may actually give higher aggregate social returns to a developing country than investments in high-potential areas. In fact, rather than sacrificing growth, spending on less-favored areas might offer "win-win" possibilities, in terms of growth, poverty reduction, and regional equality.

## POLICY RECOMMENDATIONS

First, China and India should increase spending on rural infrastructure, particularly roads, and on education and R&D, to achieve further rounds of poverty reduction and agricultural growth. Especially important is the need to increase investments in R&D, since these investments are often only a small percentage of agricultural GDP.

Second, research in other developing countries on the impact of different types of public investment should be conducted. Given the pressure that macroeconomic reforms have placed on governments to limit their budgets, the results from such research could assist policymakers in targeting their resources more effectively.

The following are additional policy-related suggestions:

- Counter the urban and industrial bias in development policies, and increase overall investments in rural areas, given their higher populations and large, if not dominant, contribution to national GDP. These investments will provide a long-term solution to the problem of food security and poverty.

- Improve the targeting of programs designed specifically for poverty alleviation, or use the funds for investments that promote long-term solutions.
- Use funds for rural development and soil and water conservation to improve the productive capacity of soil and water resources, as well as to build roads.
- Give priority to R&D, education, and roads, which yield the largest poverty and productivity impacts.
- Channel additional investments to less-developed areas, while maintaining expenditure levels for developed areas. Less-favored lands offer favorable returns on many investments and have a big impact on poverty. However, it would be dangerous to extrapolate the results of these studies beyond Asia, since many poorer countries, especially in Africa, have not yet invested sufficiently in their high-potential lands to reach the point of diminishing returns in those areas.



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